

Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (currently amended) An isolated or recombinant nucleic acid encoding menin, wherein said isolated nucleic acid is separated from open reading frames that flank a menin gene in its naturally occurring state, and wherein the isolated nucleic acid encodes a protein comprising an amino acid sequence having at least 95% identity to SEQ ID NO:2.
2. (cancelled)
3. (previously presented) The isolated or recombinant nucleic acid of claim 1, wherein the sequence comprises the coding region of SEQ ID NO:1.
4. (previously presented) The isolated or recombinant nucleic acid of claim 1, wherein the sequence comprises SEQ ID NO:3.
5. (previously presented) The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid sequence encodes a protein having the sequence set forth in SEQ ID NO:2.
- 6.-18. (cancelled)
19. (currently amended) A method for detecting in a test sample the presence or absence of a mutation in a human MEN1 gene comprising a nucleotide sequence that encodes a human menin as set forth in SEQ ID NO:2, or the presence or absence of the MEN1 gene, the method comprising:

a) contacting said test sample with a first oligonucleotide having a sequence that discriminates between a the wild type gene and ~~the~~ a missing allele or mutant form, wherein the first oligonucleotide binds to an exon or intron of the MEN1 gene; and,

b) detecting the formation of a duplex between the gene and the first oligonucleotide sequence.

20. (previously presented) A method of claim 19, wherein the first oligonucleotide is unable to bind to the wild-type MEN1 gene under hybridization conditions in which the first oligonucleotide binds to the mutant sequence of MEN1.

21. (original) A method of claim 19, wherein the contacting step further comprises amplifying a portion of the human MEN1 gene and where the first nucleic acid is a polymerase chain reaction amplification primer which binds to an intron of MEN1.

22. (original) A method of claim 19, wherein the contacting step further comprises amplifying a portion of MEN1 and where the first nucleic acid is a polymerase chain reaction amplification primer which discriminates between wild-type and mutant forms of MEN1 using allelic specific polymerase chain reaction.

23. (cancelled)

24. (previously presented) A kit for detecting in a test sample the presence or absence of a mutation in a MEN1 gene comprising a nucleotide sequence encoding a menin polypeptide as set forth in SEQ ID NO:2, the kit comprising;

a) a container holding a first oligonucleotide sequence that discriminates between the wild type gene and the mutant form; and

b) a container holding a reagent for detecting the formation of a duplex between the gene and the first nucleotide sequence.

25. (cancelled)

26. (previously presented) The kit of claim 24, further comprising amplification primer pairs specifically binding to a human genomic DNA sequence encoding menin.

27.-29. (cancelled)

30. (currently amended) An isolated transfected cell ~~in-vitro~~, wherein the cell comprises a heterologous nucleic acid of claim 1.

31. (cancelled)

32. (previously presented) The transfected cell of claim 30, wherein the heterologous nucleic acid comprises a nucleic acid as set forth in SEQ ID NO:1 or SEQ ID NO:3.

33. (previously presented) The transfected cell of claim 30, wherein the cell is a human cell.

34. (withdrawn) An organism into which an exogenous nucleic acid sequence has been introduced, the exogenous nucleic acid specifically hybridizing under stringent conditions to a nucleic acid with:

a sequence as set forth in SEQ ID NO:1; or,

a nucleic acid encoding a protein defined as having a calculated molecular weight of about 67.5 kDa; and (a) specifically binding to an antibody raised against a protein with a sequence as set forth in SEQ ID NO:2; or (b) having at least 60% amino acid sequence identity to a protein with a sequence as set forth in SEQ ID NO:2; and,

the organism expresses the exogenous nucleic acid as a menin protein.

35. (withdrawn) The organism of claim 34, wherein the exogenous nucleic acid comprises the nucleic acid as set forth in SEQ ID NO:1 or SEQ ID NO:3.

36. (previously presented) An expression cassette comprising a nucleic acid of claim 1, wherein the nucleic acid is operably linked to a promoter.

37. (original) The expression cassette of claim 36, further comprising an expression vector.

38.-42. (cancelled)